

Cairo University

Faculty of Computers and Artificial Intelligence



# CS251

# Introduction to Software Engineering

*Sugarlush*

Software Design Specifications

Version 1.0

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# CS251: Phase 2 – Shopitects

## Project: SUGARLUSH

### Software Design Specification

April 2023

#### Contents

Team .....	3
Document Purpose and Audience .....	3
System Models .....	3
I. Architecture Diagram .....	3
II. Class Diagram(s).....	7
III. Class Descriptions .....	8
IV. Sequence diagrams .....	10
Class - Sequence Usage Table.....	16
V. State Diagram .....	17
Tools .....	18
Ownership Report .....	18



# CS251: Phase 2 – Shopitects

## Project: SUGARLUSH

## Software Design Specification

### Team

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### Document Purpose and Audience

This document is meant to illustrate the Software Design Specifications such as the architecture, class, sequence and state designs. It outlines the technical details of the development of the software to help in implementing an accurate application depending on the requirements given earlier. Moreover, the document acts as a reference for the development team throughout the software development life cycle.

Audience:

- Project manager
- Software Development team [software architects, developers, testers]
- Stakeholders.

### System Models

#### I. Architecture Diagram

Architecture used: C4 notation.

Description: We used C4 architecture as its simple abstractions will make it easy to use as well as easy to understand, it gives details on what the system is, showing system components and the technologies used and who is going to use it, as well as what interacts with the database covering presentation, application and data tiers in a more detailed manner than 3-tier architecture.

Diagram:

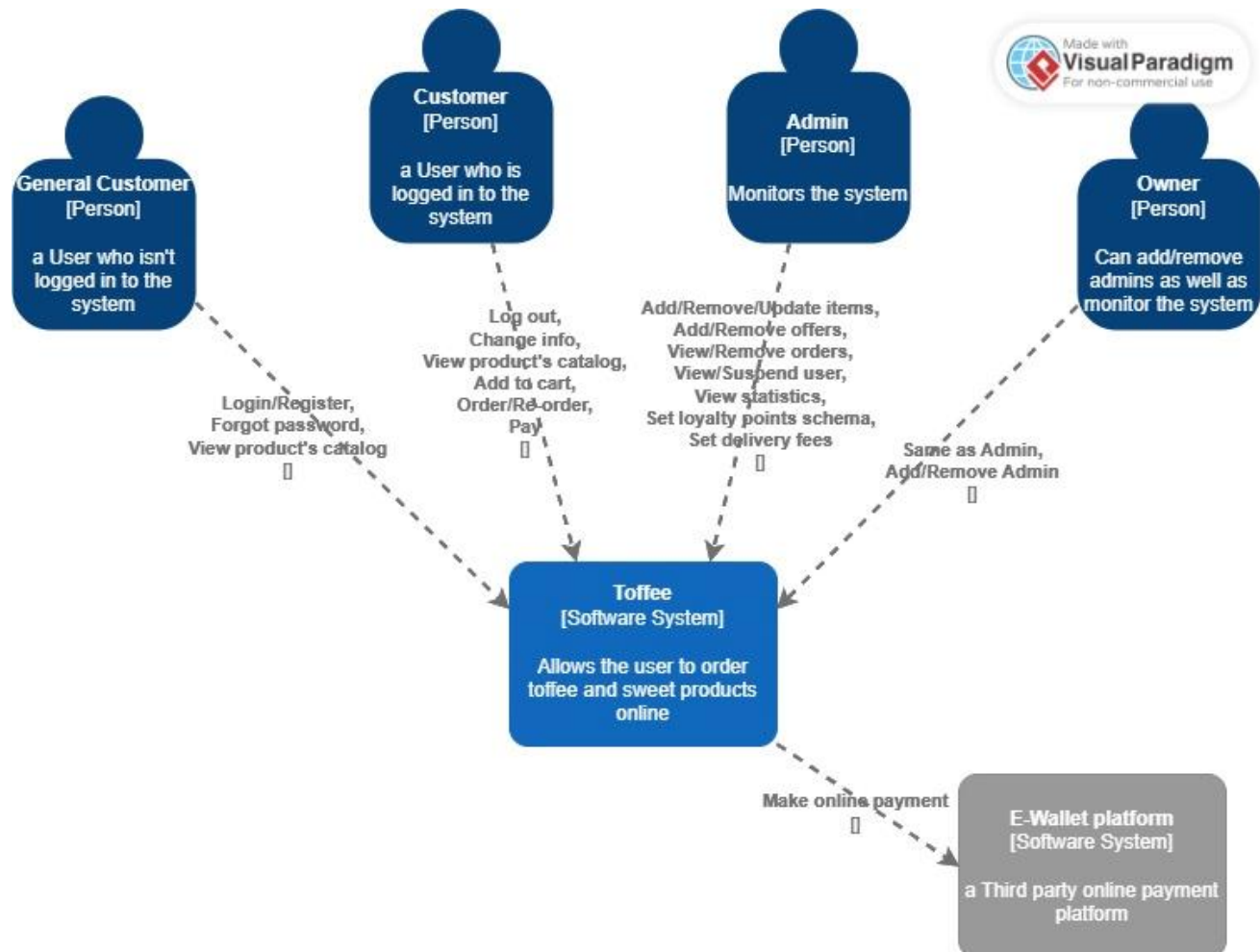


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## Project: SUGARLUSH

### Software Design Specification

context:



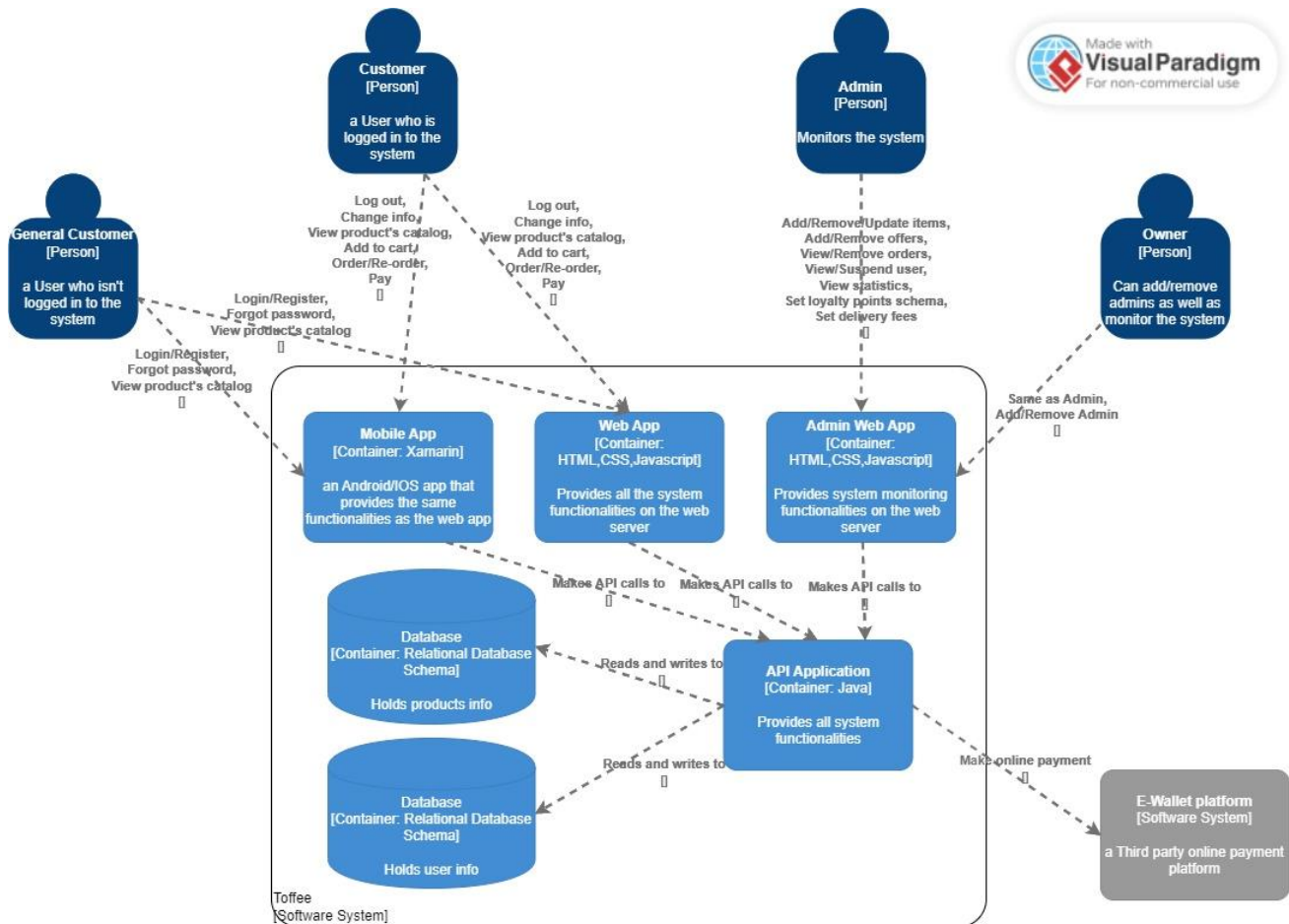


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## Project: SUGARLUSH

### Software Design Specification

#### Container:



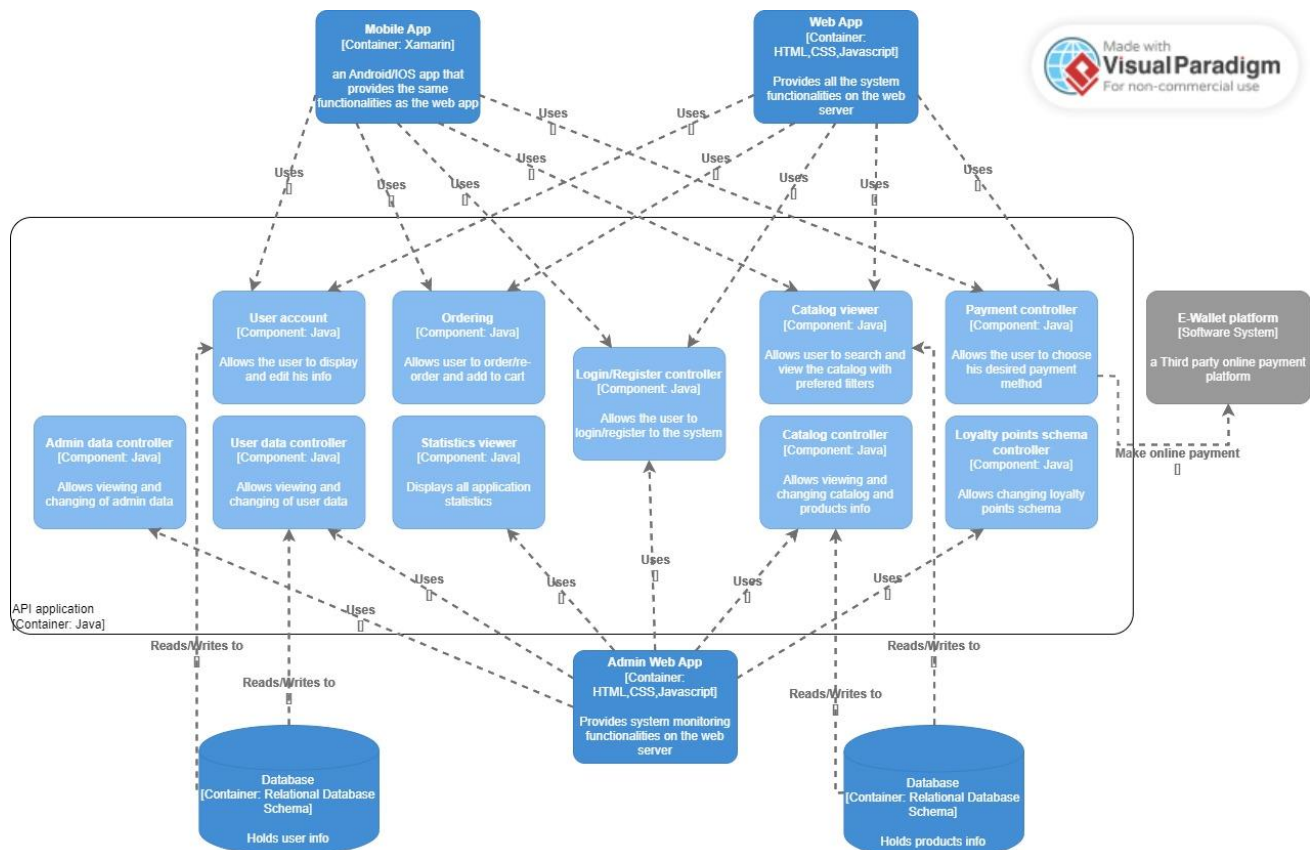


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## Project: SUGARLUSH

## Software Design Specification

### Component:



## II. Class Diagram(s)



CU – FCAI – CS251 Introduction to Software Engineering – 2023 - Software Design Specifications

**Prepared by Mostafa Saad and Mohammad El-Ramly V1.0**

**Edited by Mohamed Samir, Updated to V2.0 by Mohammad El-Ramly 10/4/2020 and V3.0 25/5/2021**





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## Project: SUGARLUSH

## Software Design Specification

### III. Class Descriptions

Class ID	Class Name	Description & Responsibility
1.	SystemApp	It's the controller class that is responsible for managing the registration and accessing app features by its methods such as login and signup. In addition, it has a relationship between the database class to be able to read and write user/system info and connect return the result to the GUI.
2.	Customer	Represents users who have created an account on the application, and therefore have access to additional features and methods such as making an order, adding to cart and paying for order info rather than just viewing the catalog.
3.	Admin	It's the class that includes all admin's attributes and methods to allow him/her to control catalog, customers and track sales, the class has relationships with other classes as Order, Payment, and Catalog as admin can access each of them.
4.	Owner	It's an inherited class from Admin class, as the owner has all admin responsibilities and relationships in addition to some methods like tracking all admin and controlling each of them.
5.	Order	It illustrates an order in the application. Each order has an id and contains information such as the address and status.
6.	OrderdProduct	Acts as a container that saves the product and its quantity to be ordered in cart.
7.	Product	Contain the items that are available for purchase. Each product has a unique id, name, description, quantity in stock and price.
8.	ProductsCatalog	Represents the collection of all products that are available for purchase in the database and update the database after each order.
9.	Payment	Shows the different methods of payment that are available to users when making an order. The Payment class is the abstract class of four inherited classes: Cash, LoyaltyPoints, Voucher, and EWallet. Each inherited class represents a specific method of payment that a user can use to complete the transaction.
10.	Cash	Represents cash payments and its methods including verifying the phone number using mobile OTP.
11.	LoyaltyPoints	Represents methods that use loyalty points as the payment.
12.	Voucher	Represents methods that use gift vouchers as payment.
13.	EWallet	Represents payments made using a digital wallet redirecting to another platform.





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## Project: SUGARLUSH

### Software Design Specification

Class ID	Class Name	Description & Responsibility
14.	GUI	Illustrates the class that deals with the user interface of a customer and connects to application features. It has a direct relationship with the system app, controller and catalog.
15.	AdminGUI	Illustrates the class that deals with the user interface of an admin and connects to its application features.
16.	UsersDatabase	Contains the database of the system including user info and connected to the system app.
17.	Controller	It's the class that controls the shopping process that begins with adding an item to the cart and ends with paying and shipping this order to its customer and closing the order. It is also connected to the catalog to update it after the order is completed.
18.	OrderStatus	It represents the status of the order between created, ready to ship, shipping, shipped, returned, cancelled, and closed.
19.	OTPsender	It's the class responsible for sending an OTP to the mobile number in the cash payment case to verify the customer's number. It's sending SMS to numbers which only verified on Twilio.



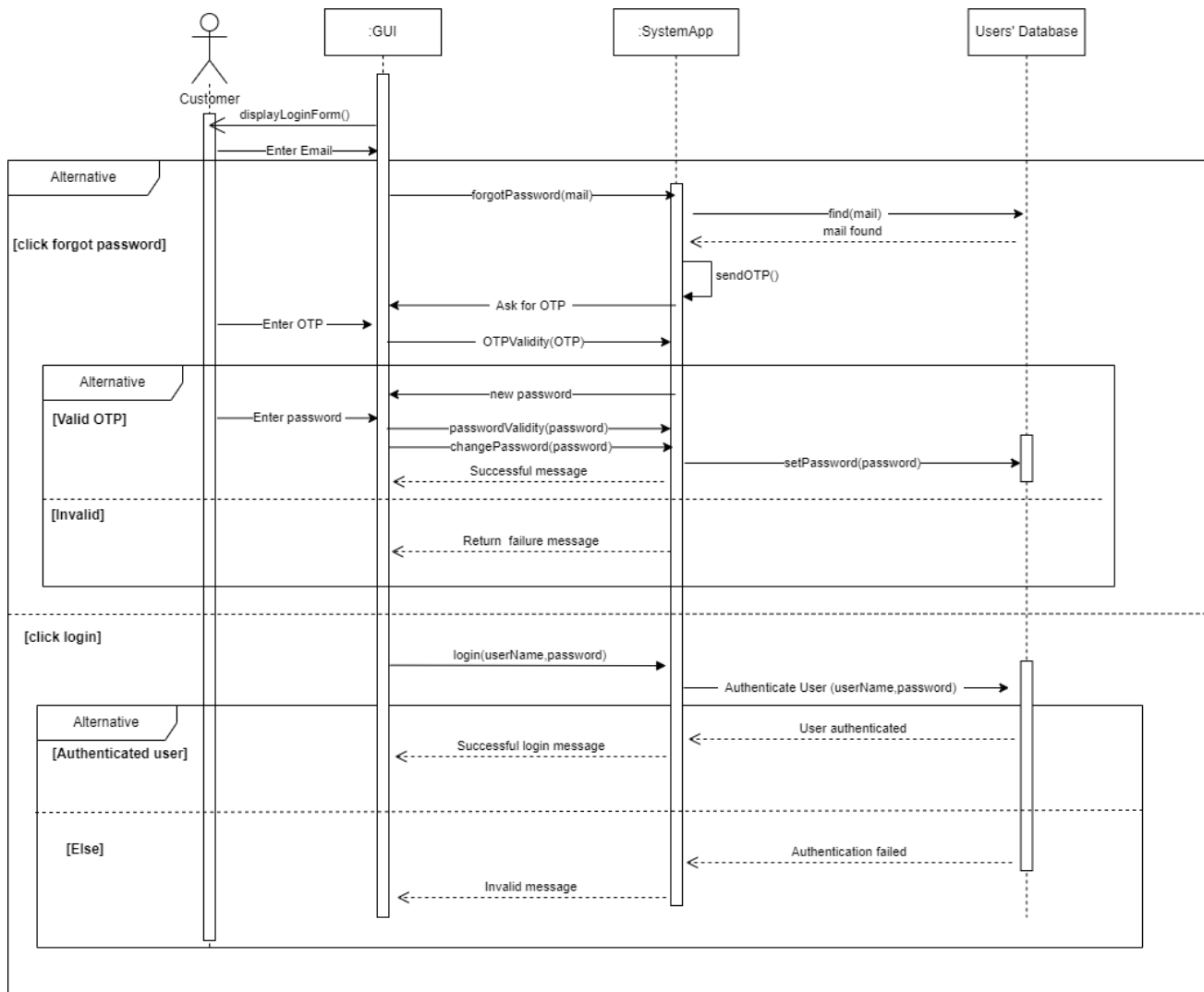
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## Project: SUGARLUSH

### Software Design Specification

#### IV. Sequence diagrams

##### 1.login:



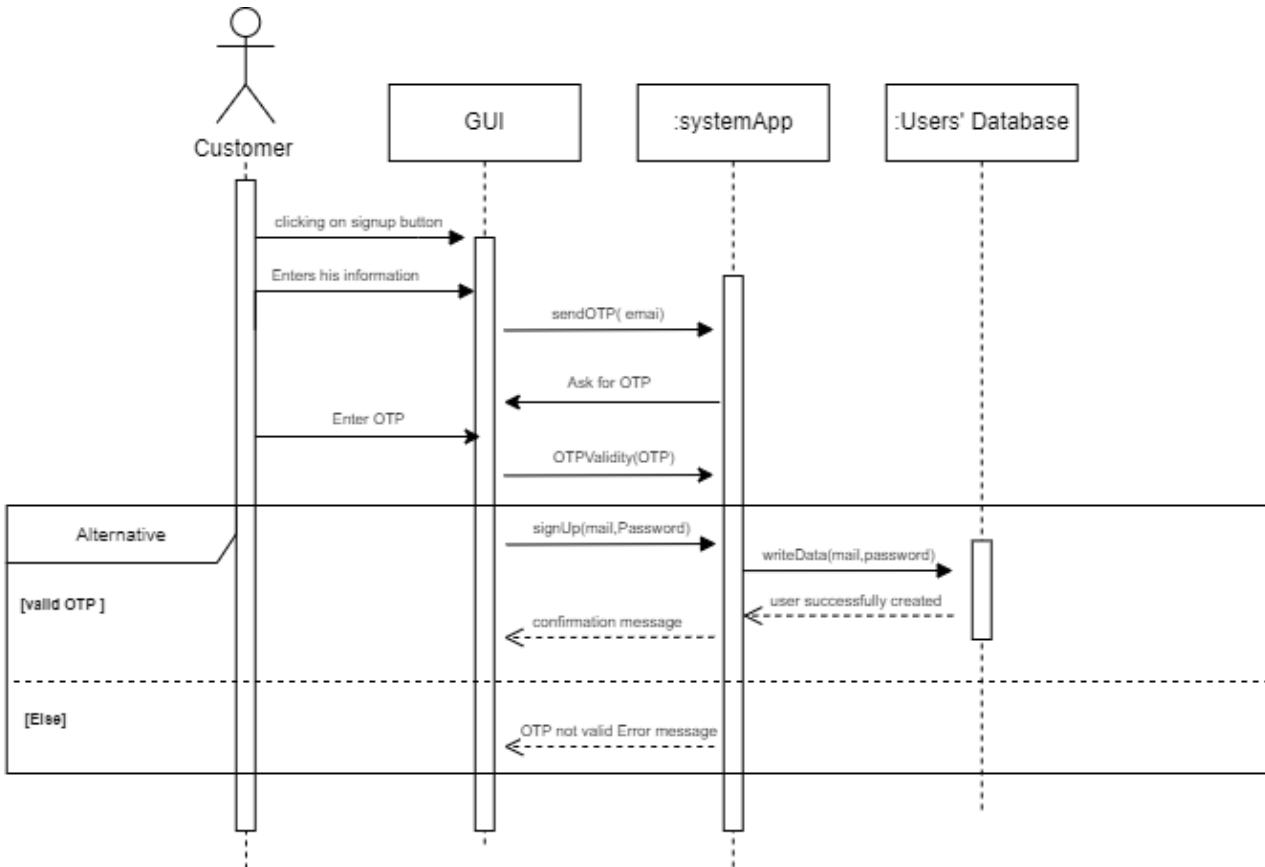


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### Software Design Specification

#### 2.Register[signup]:



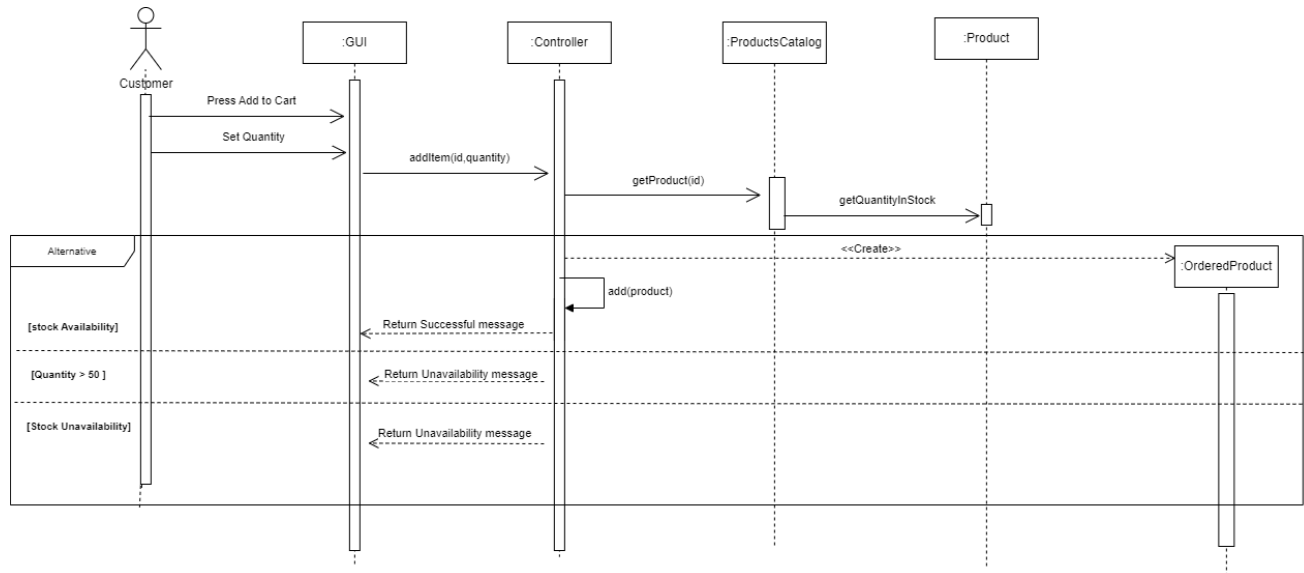


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## Project: SUGARLUSH

### Software Design Specification

#### 3.Add to Cart:



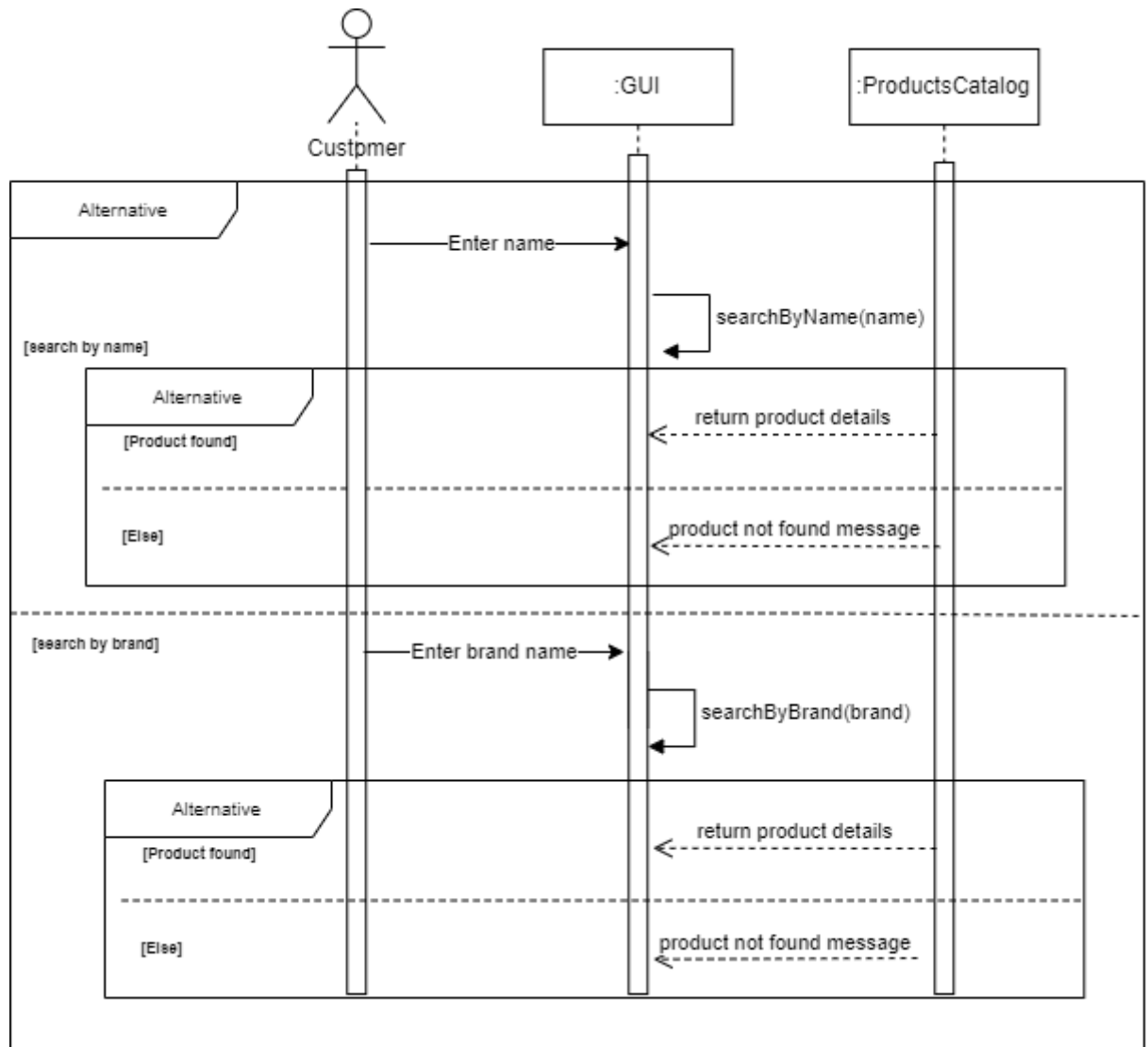


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### Software Design Specification

#### 4. Search for an item



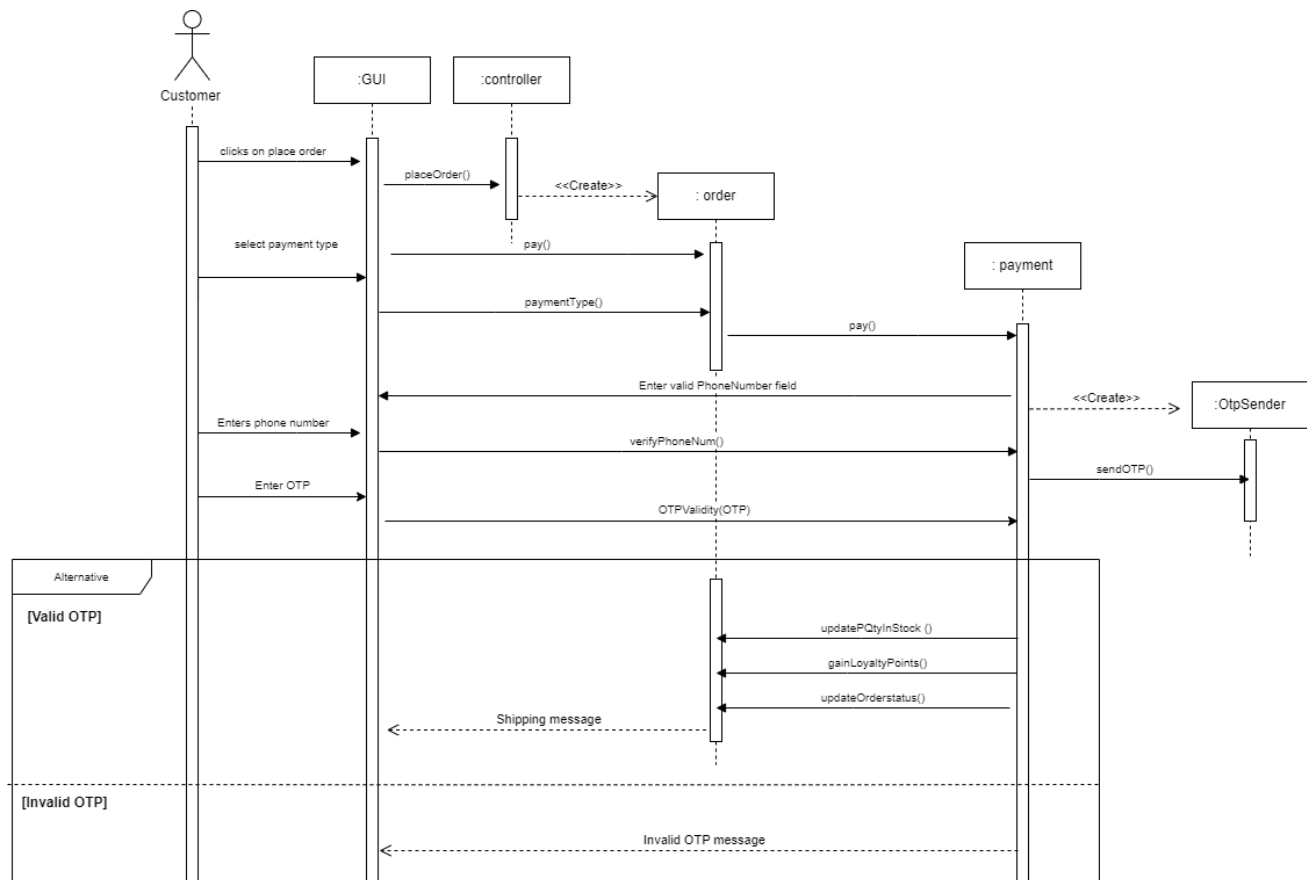


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## Project: SUGARLUSH

### Software Design Specification

#### 5.Order:



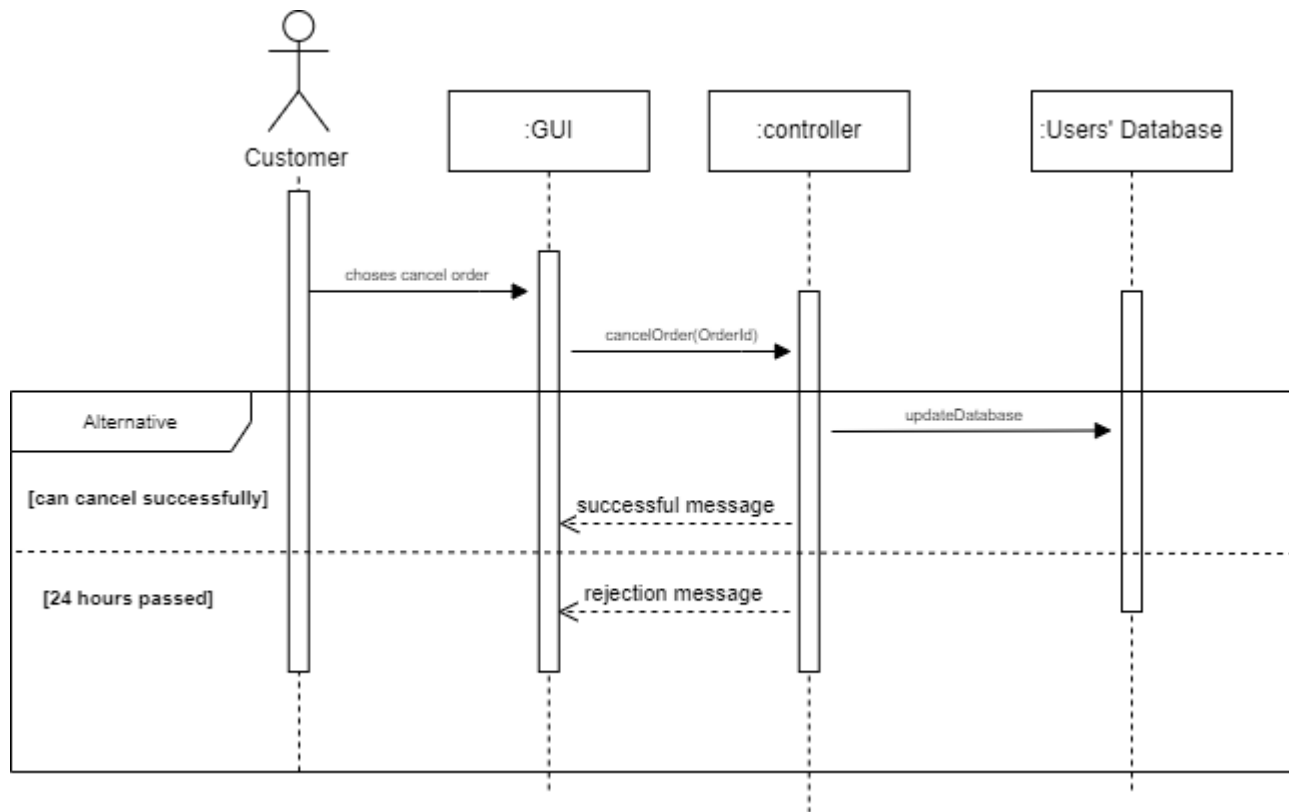


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#### 6.Cancel Order:







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#### Class - Sequence Usage Table

Sequence Diagram	Classes Used	All Methods Used
1. Login	Class <b>GUI</b> Class <b>systemApp</b> Class <b>Users'Database</b>	Login AuthenticateUser. MailValidity OTPValidity PasswordValidity EditInfo
2. Register	Class <b>GUI</b> Class <b>systemApp</b> Class <b>Users'Database</b>	Signup validateInfo OTPValidity SendOtp writeData
3. Add to Cart	Class <b>GUI</b> Class <b>Controller</b> Class <b>ProductsCatalog</b> Class <b>Product</b> Class <b>OrderedProduct</b>	addItem getProduct getQuantityInStock
4. Search for an item	Class <b>GUI</b> Class <b>ProductsCatalog</b>	searchByName searchByBrand
5. Order	Class <b>GUI</b> Class <b>Controller</b> Class <b>Order</b> Class <b>Payment</b> Class <b>OtpSender</b>	placeOrder checkout pay otpValidity verifyPhoneNum paymentType updateQtyInStock updateOrderStatus
6. Cancel order	Class <b>GUI</b> Class <b>Controller</b> Class <b>UsersDatabase</b>	cancelOrder update

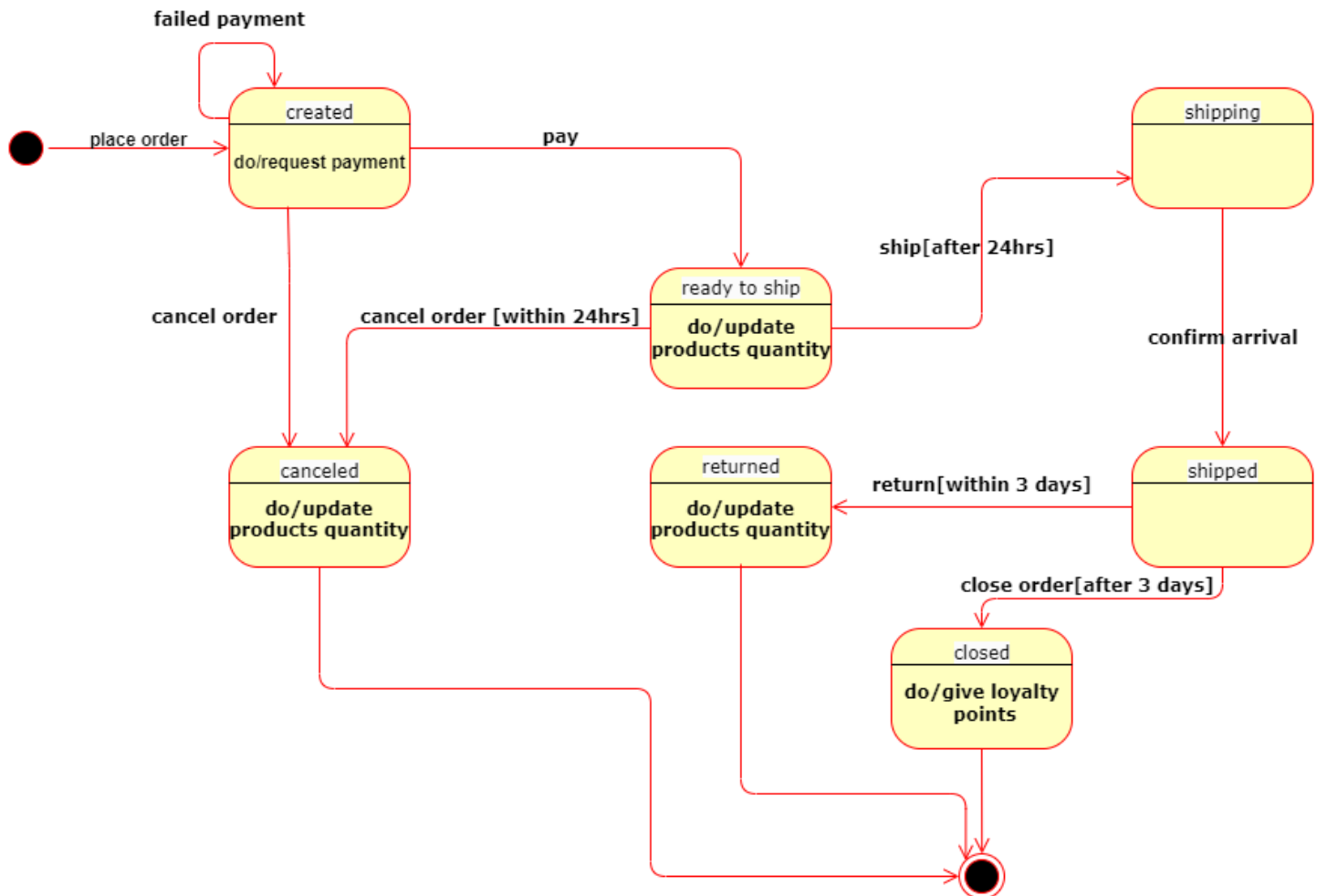


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#### V. State Diagram





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### Tools

- Draw.io - class diagram & sequence diagram & state diagram.
- Visual paradigm - Architecture Diagram.

### Ownership Report

Item	Owners
Architecture Diagram, parts of class Diagram.	Alan Samir Hakoun
Sequence Diagram, parts of class Diagram.	Sohaila Abdelazim Khalifa
Sequence Diagram, parts of class Diagram.	Sara Tamer Mohamed